

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A plasma processing method comprising:

supporting a substrate to be opposed to an electrode;

setting a variable frequency of high frequency power f (Hz);

setting the plasma processing gas to pressure P (Torr) where P (Torr) satisfies the following relationship

$$2 \times 10^{-7} (\text{Torr}/\text{Hz}) \times f(\text{Hz}) \leq P(\text{Torr}) \leq 500 (\text{Torr})$$

~~wherein f (Hz) is a variable frequency of the high frequency power and wherein the plasma processing gas is a mixture gas of a reactant gas and an inert gas; and~~

supplying high frequency power between the electrode and a holder to generate plasma between the electrode and the substrate on the basis of a plasma processing gas; and

performing plasma processing on the substrate utilizing the generated plasma.

2. (Cancelled).

3. (Cancelled).

4. (Previously Amended) The plasma processing method according to claim 1, wherein the pressure P (Torr) of the plasma processing gas is set to satisfy the following relationship

$$5xP_r(\text{Torr}) \leq P(\text{Torr})$$

where P_r (Torr) is partial pressure of the reactant gas.

5. (Previously Amended) The plasma processing method according to claim 1, wherein the pressure P (Torr) of the plasma processing gas is set to satisfy the following relationship

$$P(\text{Torr}) \leq 3.5xP_L(\text{Torr})$$

where the pressure P_L (Torr) is a higher one of a pressure represented by the following relationships

$$P_L(\text{Torr}) = 5xP_r(\text{Torr})$$

$$P_L(\text{Torr}) = 2x10^{-7}(\text{Torr}/\text{Hz})xf(\text{Hz})$$

where P_r (Torr) is a partial pressure of the reactant gas.

6. (Original) The plasma processing method according to claim 1, wherein the frequency f (Hz) of the high frequency power is at least 10MHz and at most 500MHz, and the pressure P (Torr) of the plasma processing gas is at least 100Torr and at most 500Torr.

7. (Original) The plasma processing method according to claim 2, wherein the inert gas is a He gas.

8. (Previously Amended) The plasma processing method according to claim 1, wherein the plasma processing method is one for performing film forming processing on the substrate.

9. (Previously Added) The plasma processing method of claim 1, wherein the plasma processing method is one for performing etching on the substrate.

10. (Previously Added) The plasma processing method of claim 1, wherein the plasma processing method is one for performing surface treatment on the substrate.